Reaction of Alkaline Earth Metals and Water

Purpose: The purpose of this experiment is to observe the activity of Magnesium and Calcium in water. If they react, a base will be formed which can be indicated using litmus paper or phenolphthalein. The products will be $M(OH)_2$ where M is the metal and H_2 gas. Hydrogen gas is flammable and when tested with a burning splint, the hydrogen gas should ignite making a popping sound and then go out.

Procedure:

1. Obtain 2 large test tubes in a wooden test tube rack and fill the test tubes ½ full with water

2. Obtain a wooden splint, stirring rod, Red and Blue Litmus Paper, Phenolphthalein, a small strip of Mg and a small piece of Ca (do not touch this!)

3. LIGHT the Bunsen Burner

4. Place each of the metals in a separate test tube, observe and record observations.

5. Place a burning splint to the mouth of the test tube where an obvious reaction is taking place.

6. Record observations below.

Test Tube # 1 Mg	
Test Tube # 2 Ca	

7. If one or both of the two reactions did not occur, heat gently using a Bunsen burner. Using your test tube holder, gently move the test tube back and forth through the flame. Hold test tube away from you and your lab partner.

8. Step 2: Place a stirring rod in test tube # 1 and touch it to the litmus paper, clean the stirring rod and repeat with test tube # 2

9. Record observations below.

	Red litmus paper	blue litmus paper
Test Tube # 1 Mg		
Test Tube # 2 Ca		

10. Step 3: Add 2 drops of Phenolphthalein to each test tube and record observations.

Test Tube # 1 Mg	
Test Tube # 2 Ca	

Questions:

1. Which metal was more reactive in water? How do you know?

2. What statement could be made about the reactivity of metals as you go down through a Group or Family?

3. What do you think would happen if you put a piece of Strontium into water?

4. Write the chemical equation for the reaction between magnesium and water (try and balance the equation).

5. Write the chemical equation for the reaction between calcium and water (try and balance the equation).

6. What will the products be when alkaline earth metals react with water?

Conclusion: